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(54) ACCESSORY CONTROL WITH GEO-FENCING

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See application file for complete search history.

(56) References Cited

U.S. PATENT DOCUMENTS

6,977,630	B1*	12/2005	Donath et al.	 345/7
7,805,148	B2	9/2010	Lovell, Jr.	
7.817.033	B2	10/2010	Motovama	

7,912,030 B2 * 3/2011 Alewine et al	8,035,503 8,180,379	B2 5/201 B2 10/201 B2 5/201	Partin et al. Porstall et al.
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(Continued)

FOREIGN PATENT DOCUMENTS

CN	2645367 Y	9/2004
JP	2002359593 A	12/2002
KR	20060108997 A	10/2006
KR	20090089501 A	8/2009

OTHER PUBLICATIONS

European Search Report mailed Oct. 10, 2013 in EP Application No. 13170580, 6 pages.

(Continued)

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(57) ABSTRACT

A vehicle accessory can transmit a first signal to a mobile device, the first signal including a location of a vehicle. The mobile device can monitor its own location. The mobile device can assess whether one or more location-based criteria have been satisfied based on the location of the mobile device and the location of the vehicle. Upon determining that a location-based criterion has been satisfied, the mobile device can transmit a second signal to the vehicle accessory indicating that a function of the vehicle is to be controlled. Thus, for example, the mobile device can activate or de-activate vehicle features (e.g., door locking, vehicle defrosting, etc.) in a manner that capitalizes on efficient signal transmission.

24 Claims, 11 Drawing Sheets

